



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/824,431

04/15/2004

Tomoki Kobori

501.43679X00

6316

20457

7590

10/01/2007

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

EXAMINER

BLAIR, KILE O

ART UNIT

PAPER NUMBER

2609

MAIL DATE

DELIVERY MODE

10/01/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/824,431

Applicant(s)

KOBORI ET AL.

Examiner

Kile O. Blair

Art Unit

2609

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 5/13/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 4/15/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2, 4, 6, 7 and 9, the antecedent basis for "frequency signals" (regarding to claims 2 and 9), "the analyzing means" (regarding to claim 4), "the remaining noise discriminator" (regarding to claim 6) and "the fans" (regarding to claim 7) has not been clearly set forth.

Regarding claims 6 and 8, the phrase "and/or" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim 7 is rejected as being indefinite, because the claim 1 disclosed "a fan" which cannot be include "a plurality of fans".

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Okada (US Pat. No.6188770).

Regarding claim 1, Okada teaches a an active noise controller equipped with a fan having a plurality of vanes and a duct for guiding wind from the fan (a noise canceller for detecting noise information of a fan as in the abstract), comprising: a microphone which takes in acoustic noise in the duct (i.e. a sound wave propagates through the duct; see Background of the Invention, Col. 1, line 33); rotation speed detector which detects rotation speed of the fan (i.e. means for detecting fan rotation information; see Summary of the Invention, Col. 2, line 16); frequency calculator which calculates base and multiple frequencies determined by said rotation speed and vane numbers of the fan (i.e. the band pass filter which extracts the frequency from the noise, see abstract); analyzer which analyzes the level of the acoustic noise taken in with the microphone for each of the base and multiple frequencies calculated by the frequency calculator in a time sequential manner (i.e. the fan noise canceller comprising means for detecting noise information, see abstract); phase controller controls the phase of the acoustic noise for each of the base and multiple frequencies in a time sequential manner(i.e. output control means for controlling the phase of the blade passing frequency signal, see abstract); and signal generator which generates a driving signal based on the analyzer (i.e. the electrical signal containing a frequency based on the product of the “ number of rotations per second” and the “number of blades”, Col. 2, line 42), the frequency calculator, and the phase controller, wherein the active noise controller is configured to drive a speaker with the driving signal generated by said signal generator (i.e. the canceling loud speaker, see abstract).

Regarding claim 2, Okada teaches the active noise controller according to claim 1, wherein the signal generator is configured to include adder which adds frequency signals of predetermined phases formed by the phase controller for each of the base and multiple frequencies (i.e. the means for adding together the signals of the amplitude and phase control means, Col. 3, line 65).

Regarding claim 3, Okada teaches the active noise controller according to claim 1, wherein the phase controller is configured to control the signal generator so that the phase of a generated signal of each frequency corresponding to one of the base and multiple frequencies is shifted in order that a noise level analyzed at each of the base and multiple frequencies sent from the analyzer becomes smaller (i.e. output control means for changing the amplitude and phase of the extracted signal generating an opposite waveform which would cause the noise level to become smaller through cancellation, see Okada, col. 2, line 52-59).

Claim Rejections - 35 USC § 103

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 3700

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (US Pat. No. 6,188,770) in view of Miller (US Pat. No. 4,589,137).

Regarding claim 4, it is noted that the teaching of Okada does not specifically disclose the limitation of noise discrimination (i.e. filtering) across the frequency range as required. However, Miller teaches an adaptive filter which adaptively adjusts the frequency response of the reference sample (noise alone) in both phase and amplitude (col. 2, lines 52-56). Hence it would have been obvious to one of ordinary skill in the art

to modify the device and method of Okada with the feature of discriminating noise levels and adjusting the amplitude and phase.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (US Pat. No. 6,188,770) in view of Hersh et al. (US Pat. No. 5,511,129).

Regarding claim 5, it is noted that the teaching of Okada does not specifically disclose the limitation of a look up table for amplitude and phase values as required. However, Hersh et al. teaches a plot of amplitude and phase in the frequency domain and that it may be used to construct a look up table which memorizes which memorizes at least either of a phase compensation value corresponding to a variation in a frequency component of the acoustic noise or an amplitude compensation value corresponding to the frequency characteristic (col. 4, lines 5-43). Hence it would have been obvious to one of ordinary skill in the art to modify the device of Okada with the feature of a look up table with the motivation of having a means for obtaining phase and amplitude corresponding to a frequency.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (US Pat. No. 6,188,770) in view of Müller (US Pat. No. 4,806,832).

Regarding claim 6, it is noted that the teaching of Okada does not specifically disclose the limitation of a temperature sensor and a rotation speed controls fan speed components based on temperature information as required. However, Müller teaches an electronic control circuit where the rotation speed of an electronically commuted direct

Art Unit: 3700

current motor is varied within certain limits depending on the temperature of a temperature sensor fan (col.2, line 65- col. 3, line 3). Hence it would have been obvious to one of ordinary skill in the art to modify the device and method of Okada with the feature of a temperature sensor and a rotation speed with the motivation of having a means of controlling fan speed components based on temperature information.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (US Pat. No. 6,188,770) in view Pla et al. (US Pat. No. 5,726,617) and Herbert (US Patent No. 5,297,617).

Regarding claim 7, it is noted that the teaching of Okada does not specifically disclose the limitation of a plurality of fans and a varying product of the vane numbers and the fan rotation speed as required. However, Plat et al. teaches a plurality of fans (Pla et al. col. 1, lines 8-17) and Herbert teaches fans with different vane numbers (Herbert, Figs. 1 and 15) as required. At the time of the invention, it would have been obvious for one of ordinary skill in the art to design a plurality of fans with a different product of vane numbers and rotation speed for each fan because it would have been a feasible and obvious design choice. One of ordinary skill in the art would have been motivated to choose this particular design for the fan with the motivation of customizing the fan for its intended use.

11. Claims 8-10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al (US Pub. No. 2003/0179579) in view of Okada (US Pat. No. 6,188,770) and further in view of Müller (US Pat. No. 4,806,832).

Regarding claim 8, Hsu et al. teaches the issue of noise reduction on a projector (see paragraph [0005]). Specifically, Hsu et al. teaches a projector equipped with a lamp, an image display device for forming an optical image by modulating the intensity of light from said lamp, and projection lens which projects said optical image, comprising: a cooling fan having a plurality of vanes and for cooling the lamp; a duct which guides cooling air flow from said cooling fan to the lamp (i.e. the projector comprising an optical system and a fan used to cool circuitry where the cooling air is drawn the lamp case, see Hsu et al., abstract). Okada teaches a an active noise controller equipped with a fan having a plurality of vanes and a duct for guiding wind from the fan (a noise canceller for detecting noise information of a fan as in the abstract), comprising: a microphone which takes in acoustic noise in the duct (i.e. a sound wave propagates through the duct; see Background of the Invention, Col. 1, line 33); rotation speed detector which detects rotation speed of the fan (i.e. means for detecting fan rotation information; see Summary of the Invention, Col. 2, line 16); frequency calculator which calculates base and multiple frequencies determined by said rotation speed and vane numbers of the fan (i.e. the band pass filter which extracts the frequency from the noise, see abstract); analyzer which analyzes the level of the acoustic noise taken in with the microphone for each of the base and multiple frequencies calculated by the frequency calculator in a time sequential manner (i.e. the

Art Unit: 3700

fan noise canceller comprising means for detecting noise information, see abstract); phase controller controls the phase of the acoustic noise for each of the base and multiple frequencies in a time sequential manner(i.e. output control means for controlling the phase of the blade passing frequency signal, see abstract); and signal generator which generates a driving signal based on the analyzer (i.e. the electrical signal containing a frequency based on the product of the " number of rotations per second" and the "number of blades", Col. 2, line 42), the frequency calculator, and the phase controller, wherein the active noise controller is configured to drive a speaker with the driving signal generated by said signal generator (i.e. the canceling loud speaker, see abstract), and drive a speaker with the driving signal generated by the signal generator (i.e. the canceling loud speaker, see Okada, abstract). Müller teaches a temperature sensor which detects the temperature inside the projector; a rotation speed control circuit which controls the rotation speed of the cooling fan (i.e. electronic control circuit where the rotation speed of an electronically commuted direct current motor is varied within certain limits depending on the temperature of a temperature sensor; Müller, col. 2, line 65); the frequency calculator, and the phase controller, wherein the projector is configured to change and/or control the fan rotation speed according to temperature information from the temperature sensor (an electronic control circuit where the rotation speed of an electronically commuted direct current motor is varied within certain limits depending on the temperature of a temperature sensor; Müller, col.2, line 65). Hence, it would have been obvious for one of ordinary skill in the art to modify the device of Hsu et al with the features of the structure of the active noise

Art Unit: 3700

controller as taught by Okada and the temperature sensor and rotation speed as taught by Müller as both Hsu et al, Okada and Müller are directed to the projector, with the motivation of adding the limitation of implementation of the device into a projector.

Regarding claim 9, Okada teaches the signal generator that is configured to include adder that adds frequency signals of predetermined phases formed by the phase controller for each of the base and multiple frequencies (i.e. the means for adding together the signals of the amplitude and phase control means, see Col. 3, line 65).

Regarding claim 13, Okada the phase controller that is configured to control the signal generator so that the phase of a generated signal of each frequency corresponding to one of the base and multiple frequencies is shifted in order that a noise level analyzed at each of the base and multiple frequencies sent from the analyzer becomes smaller (i.e. output control means for changing the amplitude and phase of the extracted signal generating an opposite waveform which would cause the noise level to become smaller through cancellation, see col. 2, line 52-59).

Regarding claim 10, Okada teaches the phase controller that is configured to control the signal generator so that the phase of a generated signal of each frequency corresponding to one of the base and multiple frequencies is shifted in order that a noise level analyzed at each of the base and multiple frequencies sent from the analyzer becomes smaller (i.e. output control means for changing the amplitude and phase of the extracted signal generating an opposite waveform which would cause the noise level to become smaller through cancellation, see Okada, col. 2, line 52-59).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al (US Pub. No. 2003/0179579) in view of Okada (US Pat. No. 6,188,770) in further view of Müller (US Pat. No. 4,806,832) and in further view of Miller (US Pat. No. 4,589,137).

Regarding claim 11, it is noted that the teaching of Hsu et al., Okada, Müller, and Miller do not specifically disclose the limitation of noise discrimination (i.e. filtering) across the frequency range as required. However, Miller teaches an adaptive filter which adaptively adjusts the frequency response of the reference same (noise alone) in both phase and amplitude (Miller, col. 2, line 58). Hence it would have been obvious to one of ordinary skill in the art to modify the device of Okada in view of Hsu et al. in view of Müller with the feature of discriminating noise levels and adjusting the amplitude and phase, with the motivation of adding a limitation of noise discrimination based on multiple frequencies sent from the analyzer wherein the projector is configured to fix an amplitude value and phase of the driving signal of a frequency at which the noise level was judged to be the noise reduced level.

12. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al (US Pub. No. 2003/0179579) in view of Okada (US Pat. No. 6,188,770) in further view of Müller (US Pat. No. 4,806,832) and in further view of Hersh et al. (US Pat. No. 5,511,129).

Regarding claim 12, it is noted that the teachings of Hsu et al., Okada, Müller, and Hersh do not specifically disclose the limitation of a look up table for amplitude and phase values as required. However, Hersh et al. teaches a plot of amplitude and phase

Art Unit: 3700

in the frequency domain and that it may be used to construct a look up table which memorizes which memorizes at least either of a phase compensation value corresponding to a variation in a frequency component of the acoustic noise or an amplitude compensation value corresponding to the frequency characteristic (Hersh, col. 4, line 23). Hence it would have been obvious to one of ordinary skill in the art to modify the device of Okada in view of Hsu et al. in view of Müller with the feature of a look up table with the motivation of having a means of obtaining phase and amplitude corresponding to a frequency.

13. Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada (US Pat. No. 6,188,770) in view of Hsu et al (US Pub. No. 2003/0179579) in view of Miller (US Pat. No. 4,589,137) in view of Müller (US Pat. No. 4,806,832).

Regarding claim 14, it is noted that the teaching of Okada in view of Hsu in view of Müller does not specifically disclose the limitation of noise discrimination (i.e. filtering) across the frequency range as required. However, Miller teaches the projector of claim 9 with the additional limitation of an adaptive filter, which adaptively adjusts the frequency response of the reference sample (noise alone) in both phase and amplitude (col. 2, line 58). Hence it would have been obvious to one of ordinary skill in the art to modify the projector of Okada and Hsu et al. with the motivation of having a feature of discriminating noise levels and adjusting the amplitude and phase.

Regarding claim 16, it is noted that the teaching of Okada in view of Hsu in view of Müller does not specifically disclose the limitation of noise discrimination (i.e. filtering)

across the frequency range as required. However, Miller teaches the projector of claim 13 with the additional limitation of an adaptive filter, which adaptively adjusts the frequency response of the reference sample (noise alone) in both phase and amplitude (col. 2, line 58). Hence it would have been obvious to one of ordinary skill in the art to modify the projector of Okada in view of Müller in view of Hsu et al. with the motivation of having a feature of discriminating noise levels and adjusting the amplitude and phase.

14. Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al (US Pub. No. 2003/0179579) in view of Okada (US Pat. No. 6,188,770) in view of Müller (US Pat. No. 4,806,832). in view of Hersh et al. (US Pat. No. 5,511,129).

Regarding claim 15, it is noted that the teaching of Okada in view of Hsu in view of Müller does not specifically disclose the limitation of a look up table for amplitude and phase values as required. However, Hersh et al. teaches a plot of amplitude and phase in the frequency domain and that it may be used to construct a look up table which memorizes which memorizes at least either of a phase compensation value corresponding to a variation in a frequency component of the acoustic noise or an amplitude compensation value corresponding to the frequency characteristic (col. 4, line 23). Hence it would have been obvious to one of ordinary skill in the art to modify the device of Okada in view of Hsu in view of Müller with the feature of a look up table

Art Unit: 3700

motivation of having a means of obtaining phase and amplitude corresponding to a frequency.

Regarding claim 17, it is noted that the teaching of Okada in view of Hsu in view of Müller does not specifically disclose the limitation of a look up table for amplitude and phase values as required. However, Hersh et al. teaches a plot of amplitude and phase in the frequency domain and that it may be used to construct a look up table which memorizes which memorizes at least either of a phase compensation value corresponding to a variation in a frequency component of the acoustic noise or an amplitude compensation value corresponding to the frequency characteristic (col. 4, line 23). Hence it would have been obvious to one of ordinary skill in the art to modify the device of Okada in view of Hsu in view of Müller with the feature of a look up table with the motivation of obtaining phase and amplitude corresponding to a frequency.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kasama (US Pat. No. 6330336) discusses a means for noise cancellation as well as an analyzer, which measures frequency response. Gliebe (US Pat. No. 5478199) teaches a fan utilizing an acoustic liner for attenuating noise generated by the rotation of the blades

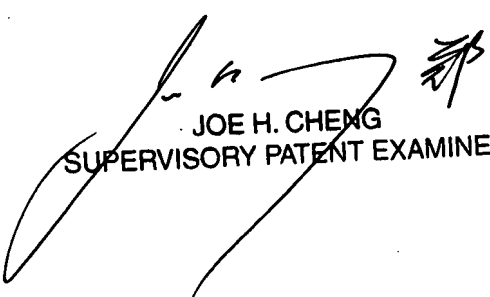
Art Unit: 3700

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kile O. Blair whose telephone number is (571) 270-3544. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joe H. Cheng can be reached on (571) 272-4433. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KB
9/20/07



JOE H. CHENG
SUPERVISORY PATENT EXAMINER